AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A method of identifying a candidate beta catenin pathway modulating agent, said method comprising the steps of:

(a) providing an assay system comprising a Polo Like Kinase 4 (PLK4) polypeptide or nucleic acid, wherein the assay system is capable of detecting the activity or expression of PLK4;

(b) contacting the assay system with a test agent ~~under conditions whereby, but for the presence of the test agent, the system provides a reference activity~~; and

(c) ~~detecting a test agent-biased activity of the assay system, wherein a difference between the test agent-biased activity and the reference activity identifies the test agent as~~ determining the activity or expression of the PLK4 polypeptide or nucleic acid in the assay system in the presence or absence of the test agent of step (b), wherein a change in PLK4 activity or expression between the presence and absence of the test agent identifies the test agent as a candidate beta catenin pathway modulating agent.

2. (Currently amended) The method of Claim 1 wherein the assay system comprises cultured cells that express the PLK4 polypeptide.

3. (Original) The method of Claim 2 wherein the cultured cells additionally have defective beta catenin function.

4. (Withdrawn) The method of Claim 1 wherein the assay system includes a screening assay comprising a PLK polypeptide, and the candidate test agent is a small molecule modulator.

5. (Withdrawn) The method of Claim 4 wherein the assay is a kinase assay.

6. (Original) The method of Claim 1 wherein the assay system is selected from the group consisting of an apoptosis assay system, a cell proliferation assay system, an angiogenesis assay system, and a hypoxic induction assay system.

7. (Withdrawn) The method of Claim 1 wherein the assay system includes a binding assay comprising a PLK polypeptide and the candidate test agent is an antibody.

8. (Currently amended) The method of Claim 1 wherein the assay system includes an expression assay comprising a PLK4 nucleic acid and the candidate test agent is a nucleic acid modulator.

9. (Original) The method of claim 8 wherein the nucleic acid modulator is an antisense oligomer.

10. (Currently amended) The method of Claim 8 wherein the nucleic acid modulator is a phosphothioate morpholino oligomer (PMO).

11. (Withdrawn) The method of Claim 1 additionally comprising:

(d) administering the candidate beta catenin pathway modulating agent identified in (c) to a model system comprising cells defective in beta catenin function and, detecting a phenotypic change in the model system that indicates that the beta catenin function is restored.

12. (Withdrawn) The method of Claim 11 wherein the model system is a mouse model with defective beta catenin function.

13. (Withdrawn) A method for modulating a beta catenin pathway of a cell comprising contacting a cell defective in beta catenin function with a candidate modulator that specifically binds to a PLK polypeptide, whereby beta catenin function is restored.

14. (Withdrawn) The method of claim 13 wherein the candidate modulator is administered to a vertebrate animal predetermined to have a disease or disorder resulting from a defect in beta catenin function.

15. (Withdrawn) The method of Claim 13 wherein the candidate modulator is selected from the group consisting of an antibody and a small molecule.

16. (Currently amended) The method of Claim 1, comprising the additional steps of:

(d) providing a ~~secondary~~ second assay system comprising cultured cells or a non-human animal expressing PLK4 capable of detecting a change in the beta catenin pathway,

(e) contacting the ~~secondary~~ second assay system with the test agent of step (b) ~~or an agent derived therefrom under conditions whereby, but for the presence of the test agent or agent derived therefrom, the system provides a reference activity~~; and

(f) measuring the beta catenin pathway in the presence or absence of the test agent, wherein the detection of a difference in the presence and absence of the test agent ~~detecting an agent-biased activity of the second assay system, wherein a difference between the agent-biased activity and the reference activity of the second assay system~~ confirms the test agent ~~or agent derived therefrom~~ as a candidate beta catenin pathway modulating agent~~, and wherein the second assay detects an agent-biased change in the beta catenin pathway~~.

17. (Currently amended) The method of Claim 16 wherein the ~~secondary~~ second assay system comprises cultured cells.

18. (Withdrawn) The method of Claim 16 wherein the secondary assay system comprises a nonhuman animal.

19. (Withdrawn) The method of Claim 18 wherein the non-human animal mis-expresses a beta catenin pathway gene.

20. (Withdrawn) A method of modulating beta catenin pathway in a mammalian cell comprising contacting the cell with an agent that specifically binds a PLK polypeptide or nucleic acid.

21. (Withdrawn) The method of Claim 20 wherein the agent is administered to a mammalian animal predetermined to have a pathology associated with the beta catenin pathway.

22. (Withdrawn) The method of Claim 20 wherein the agent is a small molecule modulator, a nucleic acid modulator, or an antibody.

23. (Withdrawn) A method for diagnosing a disease in a patient comprising:
obtaining a biological sample from the patient;
contacting the sample with a probe for PLK expression;
comparing results from step (b) with a control;
determining whether step (c) indicates a likelihood of disease.

24. (Withdrawn) The method of claim 23 wherein said disease is cancer.

25. (Withdrawn) The method according to claim 24, wherein said cancer is a cancer as shown in Table 1 as having >25% expression level.